Predicting bakko (*Rhizophora mucronata* Lam.) fuelwood plantation productivity from soil properties in the Estern Sinjai, South Sulawesi

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Abstract

Lack of knowledge of soil properties related to particular mangrove species has lead to unsuitable site in plantation programs. As a consequence, unsatisfactory growth and low productivity of plantation stands are common in some coastal areas. This paper deals with bakko (*Rhizophora mucronata* Lam.) fuelwood plantation productivity related to soil physical properties in the Eastern Sinjai, South Sulawesi. The goal is to provide quantitave relationships between bakko fuelwood plantation productivity and certain soil properties that can be used to predict this species growth performance on the coastal area of this region with similar environmental cahracteristic without the present existence of bakko stands. Productivity level was indicated through development site index curves prior stand measurements. Site index determination and soil samples under the bakko stands were collected from 28 temporary plots followed by soil laboratory analysis. Both simple and stepwise multiple regression analysis were performed to summarize and examine the relationships between bakko productivity and soil properties under the stand. Results showed that soil pH, clay, and salt contents are important propertes variables in site index prediction. Soils with slightly alkalinity and texture with moderate content of clay and sand as well as low content of salt are found as important factors in supporting bakko growth and productivity.

Keywords: *bakko, fuelwood, plantation, productivity, soil properties*